Enclosure 1

EPA's Detailed Comments for the King Coal Highway Delbarton to Belo Project and Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application Draft Supplemental Environmental Impact Statement

Project History and NPDES permit review

The NEPA Process

EPA reviewed and commented upon the entireproposed King Coal Highway project during the Draft and Final Environmental Impact Statement process (KCH EIS, 2000). The KCH Final EIS identified as the preferred alternative a 94-mile-long, 1,000-foot-wide corridor running from near Bluefield in Mercer County to near Williamson in Mingo County. The KCH Final EIS did not include the joint development project and the proposed Delbarton to Belo segment described in the Draft SEIS. This segment represents a shift from the alignment studied in the KCH Final EIS.

The joint development project described in the Draft SEIS was first brought to EPA's attention in November 2008 in connection withour review of a public notice by the U.S. Army Corps of Engineers (Corps) pursuant to Section 404 of the Clean Water Act, 33 U.S.C. § 1344 for discharges of dredged and/or fill material into waters of the United States in connection with the construction, operation and reclamation of the Buffalo Mountain Surface Mine. The public notice identified leaving rough grade for a portion of the KCH as a proposed post-mining land use. EPA provided comment on the public notice on January 20, 2009. Among other things, EPA recommended development of an environmental impact statement in light of the magnitude of the project, the dual nature of the project purpose, and the nature of the anticipated impacts. EPA also provided comment on the range of alternatives being considered, the magnitude and nature of the proposed impacts including water quality, the conceptual mitigation plan, and the need for a cumulative impact analysis.

On June 30, 2011, EPA received a Preliminary Draft Environmental Assessment (PDEA) for the Delbarton to Belo section. Following informal inter-agency coordination, EPA provided comment on the PDEA on Nov. 9, 2011 andrecommended that analysis would be more appropriate through an EIS. After interagency discussions, including with the Council on Environmental Quality, the lead agencies announced that an EIS would be prepared (instead of an EA) on December 12, 2011. On January 25, 2012 a notice of intent to prepare a supplemental environmental impact statement (SEIS) for the Delbarton to Belo segment of the KCH that would also serve as the NEPA documentation for the Corps' CWA Section 404 permit decision for the Buffalo Mountain Surface Mine was published in the Federal Register. Interagency calls/meetings took place in February 2012 to discuss process and scoping(including Febuary 3 and 7). EPA agreed to participate as a cooperating agency in the development of the SEIS in correspondence dated March 16, 2012. EPA sent scoping comments for the SEIS in correspondence dated March 19, 2012. EPA has continued informal communications with the lead agencies.

We appreciate that the Corps and Federal Highways Administration (FHWA) ultimately agreed that the impacts from this proposed joint development project warrant the level of thorough analysis that can be provided in an environmental impact statement. While EPA ultimately accepted a role as a cooperating agency, EPA noted several reservations; specifically that considerable work on the study had preceded the announcement of the SEIS process and invitation to EPA to become a cooperating agency. EPA also noted that, notwithstanding our role as a cooperating agency, we retain an independent obligation to review and comment on the Draft SEIS pursuant to Section 309(a) of the Clean Air Act.

The NPDES Permit

From October 2011 through October 2012, EPA reviewed a draft National Pollutant Discharge Elimination System (NPDES) permit for proposed discharges of effluent from the Buffalo Mountain Surface Mine submitted by the West Virginia Department of Environmental Protection (WVDEP) pursuant to Section 402 of the CWA, 40 C.F.R. §§ 123.43 and 123.44 and the *Memorandum of Agreement Regarding the Administration and Enforcement of the NPDES Program in West Virginia (1982)*. On January 20, 2012, EPA provided WVDEP with a specific objection to the draft NPDES permit because it failed to contain the minimum effluent limits and other conditions sufficient to achieve applicable water quality standards. EPA also provided additional comments on the draft NPDES permit expressing a number of concerns and making a number of recommendations, including the need to address the concern that the project would result in substantial degradation of its receiving waters from very high quality to marginally supporting water quality standards and that the alternatives analysis included in the anti-degradation justification was extremely limited.

Following numerous communications, WVDEP submitted revisions to the NPDES permit that EPA ultimately determined satisfied the basis for EPA's objection, that is, that the draft NPDES permit as originally submitted had not included the minimum limitations and conditions necessary to achieve applicable water quality standards. Because the basis for its objection was resolved, EPA withdrew its specific objection. WVDEP's revisions, however, did not address many of EPA's comments and recommendations, including EPA's concerns about degradation of the receiving waters and the limited alternatives analysis. EPA's letter withdrawing its specific objection also noted: "The Clean Water Act (CWA) Section 404 process related to the Buffalo Mountain Surface Mine remains ongoing, and it is EPA's understanding that a supplemental Environmental Impact Statement is being prepared. The considerations embodied in Sections 402 (NPDES) and 404 of the CWA are different, and the two provisions impose different requirements. Accordingly, our decision as to the revised draft NPDES permit should not be construed as a finding that this project satisfies the Section 404(b)(1) Guidelines."

EPA's decision to withdraw its objection to the draft NPDES permit for the project should not be construed as a determination that the project satisfies the Section 404(b)(1) Guidelines or that there is no need for the lead agencies to consider issues related to water quality under NEPA. The primary focus of Section 402 of the CWA and the NPDES program is to assure that discharges of wastewater and stormwater meet the *minimum* (emphasis added) established technology-based standards and do not cause or contribute to a violation of water

quality standards. While these considerations overlap with some aspects of the requirements of the Section 404(b)(1) Guidelines and considerations relevant to the NEPA analysis, they do not occupy the field. For example, Section 402 of the CWA and its implementing regulations do not require that the discharge of fill material be avoided and minimized to the maximum extent practicable or that the least damaging practicable alternative be authorized, as required by the Section 404(b)(1) Guidelines. The NPDES permit's focus is on the quality of the effluent, rather than on the impacts (such as loss of dilution) that result from the filling of streams.

With respect to NEPA, the issuance of a CWA Section 401 water quality standards certification by the State or an NPDES permit does not obviate the lead agencies' responsibility to take a hard look at the impacts of the proposed project on the quality of our nations' waters. To the contrary, it is well-established that the lead agencies abdicate their responsibility when they rely solely upon the certification of a State or other federal agency regarding water quality standards. This is, in part, because "certification does not mean that [the State] found no environmental damage whatever. In fact, there may be significant environmental damage (*e.g.*, water pollution), but not quite enough to violate applicable (*e.g.*, water quality) standards." *Calvert Cliffs' Coordinating Committee, Inc. v. United State Atomic Energy Comm'n,* 449 F. 2d 1109, 1123 (D.C. Cir. 1971). EPA has consistently expressed concern that water quality will degrade substantially from its present very good quality, even if conditions ultimately would minimally support water quality standards. Accordingly, while the lead agencies can and should consider West Virginia's CWA Section 401 water quality certification and the provisions of the NPDES permit, water quality considerations as part of the NEPA process should not be limited to deference to those actions.

Purpose and Need

NEPA requires that the SEIS describe and analyze reasonable alternatives within the range dictated by the nature and scope of the proposal. Consideration of alternatives is the heart of NEPA, and the SEIS should rigorously analyze the range of alternatives that are consistent with the project purpose. While the range of alternatives to be considered need not be infinite, failure to consider a reasonable alternative renders an EIS inadequate.

EPA recognizes the complexity of developing an Environmental Impact Study to address two separate Federal agencies' compliance with NEPA, for essentially two otherwise unrelated projects that have been combined into one. Unfortunately, this has led to a confusing presentation of Purpose and Need Statements for the study. Because the project purpose and need provides the basis for identifying the range of reasonable alternatives to be considered in the SEIS, it is important that the project purpose and need be identified clearly.

The Draft SEIS (Section 2.3) describes the project purpose as: "The purpose of the current action is to develop a coal mine project that accommodates the future construction of the King Coal Highway between Delbarton and Belo in Mingo County, West Virginia." According to the Draft SEIS, satisfying this purpose would satisfy the following needs: "produce coal to satisfy national and international demand for electricity; and allow future completion of a portion of the KCH that is consistent with the purpose and need statements identified in the 2000 King Coal Highway FEIS."

From this starting point, the Draft SEIS goes on to present separate purpose and need statements for each component. For the mine component, the Draft SEIS (Section 2.3.1) describes the "basic" purpose as "to remove bituminous coal reserves," and the "overall" project purpose as "to construct attendant and associated features, including permanent excess overburden storage areas, construction of required sediment and drainage control structures, and the extraction of bituminous coal reserves underlying stream channels, to facilitate the extraction of minable coal reserves … located within the … SMCRA permit boundary… and to allow for the subsequent construction of a portion of the King Coal Highway between Delbarton and Belo." With respect to the highway component, the Draft SEIS (Section 2.3.2) states that specific purpose and need statements "were established for the project through earlier planning documents," but identifies only the 2000 FEIS and ROD. The presentation is confusing as it relies both upon broad statements of purpose and need from the 2000 FEIS and ROD, but also refers to the Delbarton to Belo Project needs as "remain[ing] valid." It is unclear from where the Delbarton to Belo Project needs were derived, how they may be independent from those of the KCH as a whole, or why the original proposed KCH alignment would not meet those needs. The Draft SEIS should identify and discuss a project purpose and need with specific reference to the Delbarton to Belo segment independent of the purpose and need for the KCH as a whole.

Although not discussed as part of the project purpose and need in Section 2.3, the preferred alternative would leave a portion of the AOC variance area that is not used for the highway and associated utility corridor converted from a forestland use available for future economic development (approximately 784 acres). (Sections 4.2.1.4 & 4.2.2.4) In screening potential alternatives, the Draft SEIS appears to confuse this project benefit with the project purpose and need. See Section 3.3.3 ("Specifically, by eliminating commercial and residential development from the project, the intertwined reasons for undertaking the project (i.e., to provide the roadbed for future incorporation as a portion of the King Coal Highway; *to provide for post-mining economic development;* (emphasis added) and to allow coal to be mined) were not being completely addressed."). While identification of an incidental benefit may weigh in favor of selecting a preferred alternative, the absence of such a benefit from an alternative that otherwise meets the stated project purpose and need is not a basis for rejecting that alternative as not practicable or reasonable. Projects that meet the stated purpose and need should not be screened out solely because they would not achieve an incidental benefit associated with the preferred alternative. The heart of the EIS should compare practicable alternatives that meet the project purpose and need. The presence or absence of an incidental benefit is one variable for decision makers in identifying the preferred alternative as well as other costs, benefits and tradeoffs, but does not override the requirements for identifyingthe least environmentally damaging practicable alternative under the Section 404(b)(1) Guidelines. ,

EPA understands that the County's is determined to create economic opportunity beyond the economic contributions of an improved transportation corridor. However, the NEPA analysis should not screen out alternatives based upon a consideration that is not part of the project's purpose and need. If the lead agencies determine to treat creation of flat land as part of the project purpose and need, then the Draft SEIS should fully develop this aspect of the project purpose and need. This would include discussion of the underlying assumption that creation of flat land will attract economic development to the area; evidence supporting that assumption; the inventory of available flat land currently existing in the area; flat land projected to be available in the future (particularly within the 15 year construction horizon for the Buffalo Mountain Surface

Mine); and any potential for competition among various presently available and future parcels. The Draft SEIS also should discuss to what extent the creation of these flat lands would meet the needs of nearby communities and what type and amount of development is necessary to meet current and future economic needs of surrounding counties.

If creation of flat land is identified as a project purpose and need, the Draft SEIS would benefit from a discussion of nearby projects, such as the Red Jacket section of the KCH and Corridor G, and whether benefits from future economic development anticipated in connection with those projects have come to pass. A discussion whether construction of Corridor G has attracted the type of economic development envisioned at the time of project approval may prove particularly instructive as that project is located in the vicinity, was completed 15 years ago, and sufficient time has elapsed to identify the types of economic opportunities it attracted. While some economic development has occurred near Corridor G, a review by contractors retained by EPA indicates there may be significant undeveloped land associated with Corridor G and the Red Jacket section of the KCH available for economic use. This land may compete to attract economic use with the land projected for the BMSM/KCH project. In addition, patterns of development around Corridor G may provide evidence to support or refute the unspoken assumption in the Draft SEIS that creation of flat land is likely to attract economic development. The SEIS would benefit from a discussion of lessons learned from the Corridor G project in this regard.

Alternatives

NEPA implements its sweeping policy goals by requiring that federal agencies, through the EIS process, take a "hard look" at the environmental consequences of their proposed actions and broadly disseminate environmental information. The heart of the NEPA analysis is consideration of the range of alternatives that reasonably could achieve the project purpose. In addition to any joint project alternatives to the preferred alternative, the dual nature of the project purpose in this matter and the severe environmental consequences of the one and only build alternative necessarily results in the need for a more complex analysis of the range of alternatives to allow decision-makers and the public to identify the benefits, costs, and tradeoffs associated with a combined project.

In this case, the NEPA analysis also serves the purposes under the CWA Section 404 process to identify the Least Environmentally Damaging Practicable Alternative (LEDPA) for Corps authorization. The Section 404(b)(1) Guidelines are used by the Corps to evaluate all practicable alternatives available to the Applicant to determine the LEDPA. Fundamental to the Guidelines is the premise that no discharge of dredged or fill material shall be permitted if: (1) it causes or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable state water quality standard; (2) a practicable alternative to the proposed discharge exists that would have a less adverse impact on the aquatic ecosystem; or (3) the discharge would cause or contribute to significant degradation of the waters of the United States. See 40 C.F.R.§ 230.10.

The Draft SEIS fails to consider alternative configurations consistent with project purpose

The SEIS should provide a basis for evaluating the benefits of the proposed joint development project in light of its environmental consequences and a comparison of the net balance with environmental risks presented by alternative courses of action. The lead agencies have identified as the project purpose the construction of a portion of the KCH and construction of a surface coal mine. One alternative course of action that should be analyzed within the range of alternatives discussed in the Draft SEIS is construction of each component independently. The range of alternatives also should consider any available alternative configuration jointly constructing both components.

Due to the complexity of the project, EPA retained a contractor to assist in evaluating whether there exists potential alternative configurations that would achieve the project purpose as stated in the Draft SEIS. EPA's contractor identified a potential alternative joint configuration (RAM 145 alternative) that would entail fewer valley fills (a total of seven valley fills) and fewer stream impacts (26,235 linear feet of stream) while still achieving the project purpose as stated in the Draft SEIS, i.e., construction of the BMSM leaving rough grade for a portion of the Delbarton to Belo segment as a post-mining land use. EPA received the draft report from our contractor in December 2012 and gave FHWA and the Corps an overview of the work in a meeting in West Virginia on December 4. Portions of the contractor's work were sent to the lead agencies on December 20 to encourage consideration of a full range of reasonable alternatives. Detailed information on the contractor's analysis is in Enclosure 3. It should be noted that EPA does not necessarily endorse the RAM 145 alternative, but presented it to the lead agencies and here as a means of promoting consideration of a full range of reasonable alternatives that would achieve the project purpose and may avoid and minimize adverse environmental effects.

The Draft SEIS does not carry forward the RAM 145 alternative for analysis because the lead agencies did not consider it viable or practicable. The bases for the lead agencies' determination appear twofold. First, the lead agencies expressed concern, apparently based upon feedback from WVDEP, that the RAM 145 alternative employs a method used by the Kentucky Division of Mine Permits (i.e. Reclamation Advisory Memorandum # 145 (RAM 145)) to calculate the amount of material that can be backfilled in the mined area rather than the AOC+ method used in West Virginia. WVDEP apparently expressed concern that a consent decree entered in the *Bragg v. Robertson* litigation in U.S. district court in 2000 mandates use of the AOC+ model for designing surface mines in West Virginia. While EPA agrees that AOC+ generally is used in West Virginia, both methods provide a replicable process which identifies the material that should be backfilled onto the mine and the amount of spoil that can be placed in valley fills. Moreover, as set forth in Enclosure 3, it would appear that RAM 145 meets the basic requirements of AOC+.

The lead agencies' second basis for rejecting the RAM 145 alternative as not practicable is that the alternative does not include as much creation of flat land for future economic/residential development as the preferred alternative: "Specifically, by eliminating commercial and residential development from the project, the intertwined reasons for undertaking the project (i.e., to provide the roadbed for future incorporation as a portion of the King Coal Highway; to *provide for post-mining economic development*; and to allow coal to be mined) were not being completely addressed." (emphasis added). While the lead agencies here treat creation of flat land for post-mining economic development as part of the project purpose

and need, that is not what is represented in the Draft SEIS. EPA's contractor analysis develops alternatives which meet the specified purpose and need identified in Section 2.3 of the Draft SEIS, which refers only to removal of bituminous coal reserves and construction of the Delbarton to Belo segment of the highway. The Draft SEIS does not discuss creation of flat land for future development in Mingo County as a project purpose, nor does the FEIS for the entire KCH project. It should be added that commercial and residential development is not identified as a screening criterion in Section 3.3.2.1.

The RAM 145 alternative would achieve the stated purpose and need. If creation of flat land for future economic development is considered part of the project purpose and need, it would need to be disclosed and discussed in the Draft SEIS including the speculative nature of the assumption that, if flat land is created, then economic development will inevitably follow.

The lead agencies also express concern that the RAM 145 alternative may not be practicable because state law purportedly requires consistency between the post-mined land use for the Buffalo Mountain Surface Mine and the 2007 Mingo County Master Land Use Plan, which, according to the Draft SEIS, "envisions highway and economic development parcels in the Buffalo Mountain area and state law requires post-mining land use to be in accordance with the land uses specified in a county land use plan." (citing W. Va. Code Sec. 22-3-10(a)(3)). While Mingo County's website anticipates the creation of 932 acres of developable land, it is not clear that is the BMSM is part of the County's Master Land Use Plan. While Sections 4.2.3.1 and 4.2.3.2 of the Draft SEIS discuss the Master Land Use Plan's concept of leveraging coal mining to create other economic opportunity, neither section identifies creation of flat land associated with the BMSM as part of the Master Land Use Plan. The Office of Coalfield Community Development supplied EPA with a copy of the 2007 Mingo County Master Land Use Plan in August 2012. Included was a map entitled "Mingo County Redevelopment Authority 'Land Use Master Plan' If A Variance Is Granted." While that map depicts the future King Coal "Expressway" between Delbarton and Belo and various land utilization areas throughout the County totaling **XX** acres, it does not identify any anticipated land utilization areas along the Delbarton to Belo segment. See Enclosure 4. Moreover, it is EPA's understanding that the West Virginia statute cited in the Draft SEIS has been submitted to the federal Office of Surface Mining (OSM) under the provisions of the Surface Mining Control and Reclamation Act, 30 U.S.C. §§ 1201-1328, but not yet approved. It is EPA's understanding that in that circumstance, the West Virginia statute may not yet be effective. *See DK Excavating Inc. v. Miano*, 209 W. Va. 406 (2001). Regardless, neither state nor local requirements override federal requirements. It is well established that inconsistent state or local land use planning requirements do not necessarily render an alternative impracticable or limited the identification of the LEDPA. Additionally, based on the above information, the RAM 145 alternative would be consistent with the land use plan and would support economic development within the county.

EPA understands the County has indicated a desire to provide economic opportunities utilizing surface coal mines. Indeed, the RAM 145 method would support travel between the two termini. Moreover, nothing in the RAM 145 analysis would preclude future creation of developable land should there be interest and need. The NEPA process requires a thorough discussion the range of reasonable alternatives which the Draft SEIS lacks.

The Draft SEIS analysis is inadequate to support its assertion of reduced environmental impacts from the proposed joint development project

The lead agencies have asserted that each aspect of the proposed joint development project (i.e., the mine and the highway) has independent utility. The Draft SEIS broadly asserts that: "It was reasoned that if the footprints of the two separate projects could be combined as one, the level of environmental impact could be reduced." While it is certainly intuitive that combining two separate projects potentially can result in fewer overall impacts, the Draft SEIS should not rely solely upon an assumption, but rather should test this assumption through analysis, which is lacking in the Draft SEIS. EPA repeatedly has commented that for purposes of comparison, analysis should be developed for both projects as if they were constructed independently as well as for the proposed joint development. Such an analysis would allow the lead agencies and the public to compare the impacts, costs and benefits of each project if constructed separately with the those of the proposed joint development project and to identify any trade-offs that may be inherent in the combined project.

EPA recognizes that Table 4-31 attempts to summarize and compare impacts from a "no-build" alternative, the proposed joint development project and "total impacts of separate projects." Unfortunately, neither the "no build" alternative nor "total impacts of separate projects" are well developed within the Draft SEIS. The "no build" alternative appears to reference the scenario in which the Corps denies the CWA Section 404 permit application for the BMSM. In that case, the Draft SEIS states that FHWA and WVDOH would construct within the original corridor identified in the FEIS. The impacts from that scenario, however, are not well developed. The Draft SEIS states that the no-build alternative would impact 32,217 lf of streams (Section 4.3.6.12), but there is no discussion how this figure is derived. The impacts from the portion of the KCH alignment that would be shifted to the Delbarton to Belo segment are not clearly developed or described in the Draft SEIS. The FEIS identifies a 1000 foot corridor for planning purposes, the actual highway right of way would be approximately 300 feet wide. Using the narrower right of way, it would be expected that the scope of impacts would also be narrowed. Additionally, the Draft SEIS did not incorporate traditional avoidance and minimization techniques used in highway construction such as bridging. Thus, the impacts from the "no build" alternative would appear to be overstated.

In addition, it is unclear how the "total impacts of separate projects" described in Table 4-31 were derived. To the extent the impacts from the separate highway project are the same as the "no build" alternative, those impacts are not well developed in the Draft SEIS as described above. With respect to the separate "mine only" impacts, those appear derived from Table 4-30. To the extent the "mine only" impacts in Table 4-30 appear to presume the mine as proposed in the application, the "mine only" impacts are not well developed and likely are overstated. As discussed in more detail below, it is clear from other portions of the Draft SEIS that some aspects of the mine were designed specifically either to accommodate the highway or to compensate for uneconomical portions of the mine that are necessary to the highway. By assuming the configuration in the application, the "mine only" impacts described in Table 4-31 do not reflect a rigorous analysis because they do not account for the fact that the mine was designed to accommodate the highway.

Accordingly, while Table 4-31 purports to compare the impacts and costs of the projects as if constructed separately with the proposed joint development project, the analysis in the Table lacks rigor, overstates the impacts of the projects as if constructed separately and therefore fails to provide information necessary to conduct an adequate comparison of alternatives. The problem here largely lies in the fact that the "no build" alternative is inadequately developed and the "separate projects" alternative is not developed at all in the alternatives chapter (Chapter 3). Rigorous development of the "no build" and "separate projects" alternatives is especially important because the Draft SEIS makes clear that the joint nature of the preferred alternative has resulted in reconfiguration of both components.

As set forth above, the proposed joint project has resulted in a shift in the highway alignment from that discussed in the FEIS. While the Draft SEIS identifies the "no build" alternative as a return to the original FEIS alignment, it does not develop the shifted alignment in the Delbarton to Belo portion of the KCH. In other words, the impacts from a true "separate highway" alternative do not appear developed. To the extent impacts from the original FEIS alignment are used, they appear overstated.

The information in the Draft SEIS indicates that the impacts from the "separate mine" are overstated because they assume construction of the mine as proposed, but the Draft SEIS plainly states that accommodation of the highway played a role in mine design (Section 3.3.2.5 ("Incorporating a portion of the King Coal Highway alignment between Delbarton and Belo into the proposed surface mine played a role in the location and design of the proposed valley fills, and based on the requirements for the highway design, it was determined that 12 valley fills would be required…."). It further appears that placement of fill in certain proposed locations at the mine might not occur if the mine were constructed separately. By way of example, it appears from the Draft SEIS that Valley Fill No. 1 is proposed solely to accommodate the highway[1] and might otherwise not be constructed if the sole project purpose were the mine. According to the Draft SEIS, Valley Fill No. 1 yields a mining ratio of 22.8:1, which is above the ratios considered "uneconomical" elsewhere in the Draft SDEIS (approximately 18:1 is considered "marginal economical" and mining methods with ratios above 18:1 were rejected as uneconomical). However, according to the Draft SEIS, "mining within this area is necessary for the development of a highway alignment for the King Coal Highway between Delbarton and Belo." (Section 3.3.2.6) Thus unlike other alternatives that were rejected due to uneconomical mining ratios, it appears mining in the area of Valley Fill No. 1 was not rejected because proposed Valley Fill No. 1 is necessary to accommodate the highway. The apparent need to construct proposed Valley Fill No. 1 to accommodate the highway in turn affected the placement of Valley Fill Nos. 6 and 12. To offset the higher mining ratio at Valley Fill No. 1 necessitated by the highway alignment, the Draft SEIS recognizes that "mining ratios must be reduced [elsewhere within the project] in order for the Buffalo Mountain Surface Mine to be economically viable." (Section 3.3.2.6) To accomplish this offset, the Draft SEIS states that bulldozers must be used to move the majority of excavated overburden in the mineral removal areas adjacent to proposed Valley Fill Nos. 6 and 12, which in turn keeps the hauling distances at those areas artificially shorter by eliminating any option to use trucks. In addition, there was no

[1] However, we note that based on Figure 3-1 in the SDEIS it does not appear that Valley Fill No. 1 is accommodating the highway and the document, besides stating it, does not fully support or explain how or why Valley Fill No. supports the highway.

discussion in the document of working in the southern areas of the operation with the lower mining ratios at the same time as in the area of Valley Fill No. 1 to serve the same purposes as the areas of Valley Fill No. 6 and 12. This may provide additional opportunities to avoid impacts and was not considered in the Draft SEIS.

The foregoing illustrates that, as portrayed in the Draft SEIS, there appear to be impacts associated with the joint project that would differ from a standalone Buffalo Mountain Surface Mine. The Draft SEIS does not therefore sufficiently explain nor support the rationale for the preferred alternative being the LEDPA. EPA recognizes that, even if the joint development project would result in greater impacts than construction of each project independently, the proponents may believe that a joint project may be preferable for other reasons, such as cost saving. Nevertheless, for purposes of NEPA an analysis of the relative impacts, costs and benefits of the proposed joint project should be analyzed so as to inform decision-makers and the public as to any tradeoffs and to allow for the requisite "hard look" at environmental consequences. The type of analysis necessary to support the assertion of reduced impacts is absent from the Draft SEIS.

The Alternatives chapter also does not discuss alternatives considered and incorporated into the mine design and valley fill construction to ensure that the project will not result in significant degradation of high quality waters as required by the Section 404(b)(1) Guidelines. The Draft SEIS does not even discuss alternatives considered and apparently accepted by the applicant. For example, the AEPP submitted by the applicant as part of the NPDES permit application includes a number of measures which are being incorporated into the project design and operations including, but not all inclusive, the following items: the testing of overburden to determine the material that contains sulfur or other ionic strengthbearing material, so it can be isolated through material handling; minimizing stormwater contact with pulverized material; minimizing fill areas; augering and highwall mining only down-dip or on-strike; capping fills and spoil so as to minimize pass-through of rain water and develop a plan to reduce or prevent ionic stress. In addition, the AEPP includes the incorporation of a recirculation system below the toe of each valley fill. A discussion of these alternatives considered and incorporated was not presented in the Alternatives Chapter. Also, it is unclear in the Draft SEIS what these measures actually include or how they will be accomplished. As they are clearly alternatives which have been incorporated into the project they should be disclosed in the Draft SEIS. In addition, the AEPP identifies a series of measures not incorporated but that were considered and may be considered later. They include: increasing stream buffer zones; if necessary, conducting Toxicity Reduction Evaluation (TRE)/Toxicity Reduction Identification (TRI) pursuant to EPA's Technical Support Document; segregating weathered rock and returning to surface; limiting the number of active fills; and canting the faces of the fills to one side. As the applicant apparently believes that these measures could be considered and incorporated during construction of the BMSM, if necessary (otherwise they would not be identified as something the applicant "may consider later"), they would seem to represent practicable alternatives that should be discussed in the Draft SEIS.

As will be discussed further below, the streams proposed to be specified as disposal areas for placement of fill material are of very high quality comparable to reference conditions. The types of impacts associated with increased surface mining activity are the types of effects that should be considered when determining whether a permit will cause or contribute to significant

degradation. *See* 40 C.F.R. § 230.10(c). While measures have been incorporated to address other review processes, both the issued CWA Section 401 certification and the NPDES permit would allow impacts that would decrease the water quality and biological condition of the receiving streams to the point where water quality standards are only minimally satisfied. The Section 404(b)(1) Guidelines direct consideration of significant degradation separately from consideration as to whether the project is likely to cause or contribute to violations of State water quality standards. *Compare* 40 C.F.R. § 230.10(b)(1) *with* 40 C.F.R. § 230.10(c). Here, the Section 401 certification and the NPDES permit would allow in many instances a departure from baseline conditions that support a WVSCI scores comparable to reference condition to drop to 68, a score representing conditions that only minimally satisfy West Virginia's water quality standards. In many instances, this decrease would represent a statistically significant departure from baseline conditions and also a change in WVSCI category from "Highly Comparable to reference site conditions" (i.e., above the 25th percentile of reference site conditions) to "Comparable to below-average reference sites" (i.e. between 5th and 25th percentile of reference site conditions).

Given NEPA's requirement of a "hard look" at environmental consequences and the goal of the CWA to restore *and maintain* the physical, chemical, and biological integrity of our Nation's waters, as well as the obligation under the Section 404(b)(1) Guidelines to consider significant degradation, reliance solely upon the CWA Section 401 certification and the NPDES permit is insufficient and difficult to aid in substantiating the LEDPA determination. The SEIS should discuss degradation of surface water quality and biological condition from conditions comparable to reference quality to conditions that minimally support water quality standards.

The Draft SEIS fails to evaluate a range of practicable alternatives to the mine design to avoid and minimize aquatic impacts, taking into account new mining techniques, best management practices, and scientific data on the impacts of mining, and then evaluating the integration of a road alignment partly or more completely into the range of mine configurations. Alternative highway designs including those not dependent upon mine configurations should be addressed as well as designs that could meet project purpose and employ bridging, structures, and other methods to further avoid impacts. If less road for instance, is incorporated in PMLU, it may still prove feasible to complete the projects – weighing environmental impact, needs, cost savings, and possibly a range of land re-use (including re-forestation), if such considerations are part of the anticipated evaluation of the multiple projects. The anticipated impacts for all alternatives in the DSEIS are significant given the magnitude of the direct and indirect impacts to resources which are of very good quality as further described below. As presented, it does not appear that a "balancing" of costs and impacts has been evaluated, or that the evaluation supports identification of the LEDPA.

Baseline Data Concerns

The SDEIS relies on biological, water quality, habitat, and fish data collected from 2006 – 2011. EPA has reviewed these data, as well as data submitted as part of the Environmental Information Document, Conceptual Mitigation Plan, and Aquatic Ecosystem Protection Plan. EPA has concerns about the representativeness of the data as a result of deficiencies including the low numbers of benthic macroinvertebrates in subsamples, inaccurate taxonomic

identifications, uncertain water quality values, unusually low and disputable Rapid Bioassessment Protocols (RBP) scores, and fish sampling efficiency problems and inaccurate species identifications. In May of 2012, EPA scientists accompanied WVDEP and the applicant's consultant to each of the proposed NPDES outfalls to collect data. Our findings are summarized in Pond et al. 2013 provided in Enclosure 4. We found low conductivity (43 – 152 uS/cm), West Virginia Stream Condition Index (WVSCI) and Genus Level Index of Most Probable Stream Status (GLIMPSS) scores that were highly comparable to reference condition (85.4 – 93, and 73.5 –85.0, respectively), and sub-optimal to optimal RBP scores (127 – 160) at each site. EPA considers this dataset to be more representative of the true condition of these resources and recommends its incorporation into all documents submitted by the applicant.

Benthic macroinvertebrate data

A significant concern with the benthic macroinvertebrate data included in the Draft SDEIS is the paucity of individuals collected; 84% of the samples in the fall and 57% of samples in the spring had fewer than 100 individuals. Some samples had less than 50 individuals. In contrast, <5% of all WVDEP samples (n=5,449) have less than 100 organisms, and most of these are due to severe sedimentation or acid mine drainage. The majority of the samples used in the SDEIS contain such few organisms as to appear reflective of measurement or other errors such as sampling too soon after a large precipitation event, and are not representative of true biological condition of these streams as observed and sampled by EPA scientists in the field.

Further evidence exists that demonstrates that the submitted biological data are likely not representative and have abundance estimates off by an order of magnitude. In May 2007 and 2008 Merriam et al. (2011) collected benthic macroinvertebrates following modified WVDEP protocols in 29 small streams (197 – 2,471 acres) in the Pigeon Creek watershed. They collected an average of 1,996 individuals per square meter in each mined stream, 3,595 per square meter in streams with residential development, and 1,346 per square meter in streams with both mining and development. They collected an average of 1,063 per square meter in very small (0.8 – 1.0 km^2) reference streams. These concerns were discussed in a meeting with CONSOL and WVDEP representatives in July 2012.

WVSCI scores calculated with fewer than 100 organisms will tend to score lower on richness measures, portray instability in abundance measures, and be artificially low. In particular, richness metrics increase with the number of individuals collected; therefore use of samples with fewer individuals provides a less accurate representation of the biological condition of the resource. Early WVDEP samples were subsampled to 100 organisms, but WVDEP has been using a 200 individual fixed count since 1998 (Gerritsen 2000). The best standard values for WVSCI are based on 100 - 200 count subsamples (but overwhelmingly are driven by 200 count samples); therefore WVSCI should not be calculated on samples with less than 100 organisms.

Importantly, both the fall and spring 2006 sampling events were conducted outside of the WVSCI index period. The fall sample was collected in mid-December. Data collected during late fall/early winter can be problematic due to several factors. First, very few (<1%) of WVDEP samples (i.e., samples used to develop and calibrate the WVSCI model) were collected

from mid-October through December. Thus data collected in this season are not comparable to the WVSCI reference condition (and could be considered outliers in a statistical sense) and thus WVSCI scores for these samples should not be compared to the WVSCI reference threshold. Second, many important indicator taxa (several EPT taxa) are generally not present in headwater streams during this time due to natural life history constraints. Collecting benthos at this time results in omission of key community-level information needed to assess the baseline conditions.

The CMP and AEPP included data collected from the impact sites in 2010 and 2011, but these data were not included in the Draft SEIS. The 2010 data suffered similar problems with lack of individuals and had several instances of inaccurate taxonomic identifications. The spring 2011 data that were collected for the 402 permit were adequate, but the sample locations will not be suitable for calculating debits and credits for mitigation because those sites occur downstream of the valleyfills, not in the impact areas. However, these data could potentially be used for baseline conditions at sediment pond locations because of proximity, but this would require additional review.

EPA strongly recommends the data from May of 2012 be included in the Draft SEIS to more properly document the quality of the resource. Dataset-specific comments are indicated in Enclosure 2, including comments on data that were not included in the SDEIS but found in other permit submittals.

Habitat data

The habitat data included in the Draft SEIS were collected in 2007. Information from the CMP indicates that habitat data may have been collected in November. The data provided in the Draft SEIS appear to be from different locations on each stream than the data provided in the CMP. The 82 CMP sites appear to be in impact (footprint) locations (pages 741-749 of the CMP), whereas the 44 sites in the Draft SEIS appear to be located farther downstream on each tributary. It is difficult to compare exactly how the sites overlap, because the coordinates provided in the Draft SEIS do not appear to be correct (specifically the longitude minutes and seconds) and should be rectified in the Draft SEIS. Habitat data were also collected in 2011, but these data are not reported in the Draft SEIS.

Based on our sampling in May 2012, the habitat scores in the Draft SEIS are too low and not representative of the condition of the streams. This has implications in the sufficiency of the data for the calculation of debits/credits for mitigation. For example, 4 of the 8 sites on Conley Branch reported in the documentation had RBP scores lower than 100, and 4 out of 7 sites in Right Fork Hell Creek had scores less than 100. The Palmer Drought Severity Index indicates that this part of WV was in a moderate drought in November 2007, so it is possible that some of the smaller streams were dry during this time period. If water dependent metrics were scored as zero in these streams, the resulting score reported by the applicant would be lower than expected. There are no individual metrics or photos to help us determine whether the reported scores accurately represent the physical condition of the stream.

EPA's findings from the May 2012 sampling event showed that RBP scores, which were collected at 11 monitoring stations located near the proposed NPDES outlets, ranged from 127 –

160 (Pond et al. 2013). Again, EPA strongly recommended the data from the May 2012 sampling event be included in the draft SEIS to properly document the quality of the resource.

Water chemistry data

EPA is concerned that the specific conductance values reported in the Draft SEIS do not appear accurate. Most are reported to be less than 5 uS/cm. These values are likely to be off by one decimal point (specific conductance in Ruth Trace Branch is likely 41 uS/cm instead of 4.1 and Pigeon Creek is likely to be 595 uS/cm instead of 59.5). We also found that pH values reported in the 2010 CMP appear incorrect. Several sites had pH values of ~4.0 while others had values >10.0 pH. These discrepancies may likely be a result of faulty meter calibration. The use of these values adversely affect mitigation debits/credits under West Virginia's Stream Wetland Valuation Metric calculations.

Other data sources have shown that specific conductance is very low in most of the tributaries and significantly higher in the mainstem of Pigeon Creek. In addition, EPA measured specific conductance during the May 2012 sampling event and specific conductance ranged from 32 – 152 uS/cm at the 11 monitoring stations located near the proposed NPDES outlets (Pond et al. 2013).

Fish Data

CONSOL contracted Michael J. Baker, Inc. (Baker) to sample fish in 2006, 2008, and 2011. Only the 2008 data were referenced in the Draft SEIS, with the conclusion that the fish population of Pigeon Creek consists mainly of pollution-tolerant species such as blacknose dace and creek chubs. The 2006 and 2008 data were used in the EID, and the 2006 and 2011 data were reported in the AEPP for the NPDES permit. We reviewed data from each sampling event, and identified three major deficiencies. These include the length of the reach sampled resulting in under-sampling, errors in identification of species, and sampling methods (electrofishing) that may have been inappropriate for the water conditions (high conductivity). Flawed baseline data may result in questionable characterization of resources, evaluation of current conditions, and interpretation and assessment of future monitoring data. More detailed description of the concerns associated with the fish data is included in the Detailed Technical Comments included as Enclosure 2.

Data Gaps

There are no data on salamander populations found in the streams that will be impacted. Salamanders are a diverse and unique form of Appalachian wildlife that depend on forested headwater habitat and that cannot tolerate severe habitat modifications. Their populations have declined or disappeared from surface mined areas. During the spring 2012 sampling event, EPA biologists identified six salamander species downstream of the potential valley fill sites: *Desmognathus fuscus, Desmognathus monticola, Gyrinophilus porphyriticus, Eurycea bislineata, Notophthalmus viridescens,* and *Plethodon glutinosis* (a terrestrial species observed streamside). The SDEIS only mentions that three of these species have the potential to be present in the study area, and that habitat for these salamanders would be lost when valley fills are constructed. Recent studies have concluded that valley fills negatively impact stream

salamander abundance due to alterations in habitat structure, water quality, and macroinvertebrate communities downstream of valley fills (Wood and Williams 2013). In unimpacted headwater streams, salamander densities can reach 6-7/m^2 (Wood and Williams 2013). The loss of this keystone group of vertebrates, both in the impact area and downstream, should be accounted for in the SDEIS and the CMP.

Resource Characterization and Anticipated Impacts

As stated above, EPA scientists accompanied WVDEP and the applicant's consultant to each of the proposed outfalls from the proposed fill locations in spring 2012. The data collected by EPA reflected low conductivity (43 – 152 uS/cm); biological scores (utilizing both the West Virginia Stream Condition Index (WVSCI) and the Genus-Level Index of Most Probable Stream Status (GLIMPSS)) that were highly comparable to reference condition (85.4 – 93, and 73.5 – 85.0, respectively), and sub-optimal to optimal RBP scores (127 – 160) at each site. Our results are provided in Enclosure 5**.** EPA believes its data are representative of site conditions. Based on the data collected by EPA, the streams proposed to be specified disposal sites represent very good quality waters comparable to reference conditions.

The individual and cumulative importance of headwater streams can be substantial (e.g., Meyer et al., 2007). The burial and loss of natural headwater streams can have significant effects on stream ecosystem structure and function including the loss of efficiencies associated with the removal and transformation of nutrients and contaminants, organic matter storage and transport, and alteration of habitat for native biological communities (U.S. EPA 2011a). Nutrients are taken up and transformed more rapidly in headwaters, where waters slowed by woody debris and large inorganic substrates have longer contact times with biologically and chemically reactive benthic substrates and hyporheic zones. In addition to reducing excess nutrients, natural headwaters can remove metal contaminants (Schorer and Symader, 1998). In contrast, outflows from filled headwaters typically are net exporters of toxicants to downstream segments. The loss of natural ecosystem functions and the export of toxicants act in combination to increase risks to water quality and biological communities below MTM-VF (e.g., U.S. EPA 2011a).

We note that there are inconsistencies within the Draft SEIS and within Appendix D regarding expected impacts to surface waters. For example, page 331 in Appendix D indicates there would be 39,285 lf of permanent stream impacts, 10,215 lf of temporary stream impacts, and 0.02 ac of wetland impacts. However, page 336 in Appendix D indicates 41,651 lf of permanent stream impacts and 10,215 lf of temporary stream impacts. The table on page 4-165 of the DSEIS indicates 47,385 lf of permanent stream impacts, 9,215 lf of temporary stream impacts, and 0.19 ac of wetland impacts. Pages 4-47 and 4-87 of the DSEIS also indicate 47,385 lf of permanent stream impacts and 9,215 lf of temporary impacts. We note that table 4-22 on page 4-100 of the DSEIS, which indicates 39,285 lf of permanent stream impacts and 9,215 lf of temporary impacts, appears to be what was used for compensatory mitigation calculations. However, these figures need to be reconciled or clearly indicated what they represent with the various different (generally higher) impacts numbers depicted in several other locations throughout the DSEIS. Generally, however, it is anticipated that nearly 7.4 miles of stream will be directly lost through placement of fill for the mine and nearly 1.7 additional stream miles will be temporarily impacted.

Aquatic

Approximately 85% of the project area lies in the Pigeon Creek watershed, which is a tributary to the Tug Fork River of the Big Sandy River, while the remaining area falls within the Miller Creek watershed, which drains directly into the Tug Fork River. Pigeon Creek is already highly impacted by mining and residential impacts (Merriam et al. 2011), and was listed on WVDEP's 2010 303d list for biological impairment, and pH and iron criteria exceedences.

Through an extensive review of scientific literature and analysis, U.S. EPA (2011a) concluded that the effects of MTM/VF on streams in the Central Appalachian coalfields result in five central adverse alterations including: (1) springs, and ephemeral, intermittent, and small perennial streams are permanently lost with the removal of the mountain and from burial underfill; (2) concentrations of major chemical ions are persistently elevated downstream; (3) degraded water quality reaches levels that are acutely lethal to standard laboratory test organisms; (4) selenium concentrations are elevated, reaching concentrations that have caused toxic effects in fish and birds, and; (5) macroinvertebrate and fish communities are consistently degraded.

Adverse impacts to these tributaries include the direct burial of high quality stream habitat, impacting all wildlife that utilize these streams for all or part of their life cycles (e.g., macroinvertebrate, amphibian, fish, and water-dependent bird populations). These streams and their adjacent riparian corridors provide important habitat for many taxa of macroinvertebrates as well as many species of amphibians, reptiles, crayfish, fish, birds, bats, and other mammals. As some of the last remaining high quality headwater stream habitat in these watersheds, these streams not only support resident wildlife, but also provide ecosystem functions for downstream waters, serve as refugia for aquatic life and potential sources for recolonizing nearby waters, and ultimately serve to maintain the aquatic ecosystem integrity in the sub-basin and the rich animal diversity in the ecoregion. Loss or burial of headwater streams and associated riparian and subterranean ecosystems can result in fragmentation of remaining habitats by increasing geographical distance among populations. Subdivided populations are smaller in size, and thus more susceptible to loss of genetic diversity and to adverse effects of environmental change, placing them at higher risk of extinction (U.S. EPA 2011a).

Streams within the Central Appalachian ecoregion have some of the greatest aquatic animal diversity of any area in North America, including one of the richest concentrations of salamander fauna in the world. Salamanders are a diverse and unique form of Appalachian wildlife that depend on forested headwater habitat and that decline or disappear from surface mined areas. EPA biologists have identified six salamander species downstream of the potential valley fill sites; four of these species are aquatic and occurred within the stream, while the other two were observed along the stream bank. It is likely that other terrestrial salamander species occur within the project area. Recent studies have concluded that valley fills negatively impact stream salamander abundance due to alterations in habitat structure, water quality, and macroinvertebrate communities downstream of valley fills (Wood and Williams 2013).

As with the loss of biota, most ecosystem functions performed by a

high-gradient, forested Appalachian headwater stream are lost when it is buried or removed. Some functions, such as water conveyance and export of dissolved solids, might continue under fills in a quantitatively or qualitatively altered state. Thus, burial of these tributaries could also result in adverse effects on downstream aquatic biota through the transformation of the buried areas from sources of clean water into net exporters of contaminants to downstream waters. Based on peer-reviewed literature, as well as available data from the adjacent Peg Fork Surface Mine, EPA has concluded that construction of the BMSM may transform these headwater streams from high quality habitat into net exporters of pollutants (particularly total dissolved solids and selenium) that will travel downstream and adversely impact the wildlife communities that utilize these waters.

Scientific literature has documented structural and functional ecosystem-level effects of elevated levels of total dissolved solids (Pond et al. 2008, Simmons et al. 2008, Palmer et al. 2010, Fritz et al. 2010) and selenium (Chapman et al. 2009, Diehl et al. 2005, Ferreri et al. 2004, Lemly 2009, Palmer et al. 2010, Neuzil et al. 2005, Vesper et al. 2008) discharged through mining operations on downstream aquatic ecosystems. Based on data provided by CONSOL as required in the Peg Fork Surface Mine Permit, EPA is concerned that conductivity and selenium are elevated and are continuing to rise downstream of CONSOL's adjacent Peg Fork Surface Mine valley fills. Conductivity downstream of some of the Peg Fork valley fills has increased by more than 500 uS/cm. The valley fills proposed for the BMSM will contain significantly more waste rock than the Peg Fork valley fills, and it is therefore possible that the Buffalo Mountain valley fills will result in inputs of even more contamination than Peg Fork valley fills.

Increased pollutant levels will lead to loss of macroinvertebrate assemblages and population shifts to more pollution-tolerant taxa, specifically the extirpation of ecologically important macroinvertebrates. Based on extirpation concentrations derived for macroinvertebrates (U.S. EPA 2011b), EPA estimates that at least fourteen genera found in our baseline samples are predicted to be extirpated if specific conductance increases to 500 uS/cm in these tributaries. On a project-wide basis, this could account for 17% taxa loss (14 of 82 genera). The SAB stated that loss (extirpation) of a single genus is a significant ecological event. Reliance on WVDEP's CWA Section 401 Certification and the NPDES permit do not account for this effect. As reflected in the NPDES permit, WVDEP currently interprets West Virginia's narrative water quality criteria at the family level, and therefore does not account for taxa loss at the genus level. This is an example where significant degradation of the aquatic resource is not accounted for solely through minimal compliance with water quality standards. Through the loss of natural stream macroinvertebrate assemblages, there will be, in turn, effects further up the food chain. Even within functional feeder classifications, different genera feed, process, digest, and excrete organic matter and algae differently and thus have different effects on overall stream functions. Among other things, there may be an effect on migratory birds that use the area for breeding. For example, the breeding success of the Louisiana waterthrush is dependent on the diverse and productive assemblage of aquatic insects supported by healthy headwater systems (Mattson et al. 2009).

In addition, Appendix D of the Draft SEIS indicates that existing macroinvertebrate, amphibian and fish communities are anticipated to re-populate with similar species as existed prior to the discharge of fill material, or would not be anticipated to be impacted by these

discharges because they would likely move downstream out of the footprint of the fill or to adjacent, unimpacted areas. However, no additional analysis or documentation is provided to support these statements. Given the scope of potential impacts from a project of this nature and size both within the footprint of the fill and downstream the impact analysis does not include the permanent impacts resulting from landscape changes resulting from implementation of the post-mining land uses (i.e., from currently forested headwater areas to transportation corridors, residential, and commercial development). The impact analysis also fails to acknowledge the important interactions among aquatic organisms and with terrestrial organisms up the food chain and does not consider the existing body of science that documents the deleterious effects of Appalachian surface coal mining operations on the aquatic environment, as well as research documenting the absence of sensitive species in reconstructed stream channels following mining operations and downstream of valley fills. We recommend that the Corps' final CWA 404(b)(1) Guidelines analysis contain an appropriate level of analysis and/or documentation to support a factual determination of the potential impacts of proposed discharges on aquatic organisms and other wildlife, including the permanent impacts resulting from the proposed post-mining land uses.

Terrestrial

Forests

Although the Draft SEIS provides an accounting of the natural resources in the area, we do not feel that there is an adequate description of either the condition of the forest resources in the project impact area or the potential impacts to forests and the functions that forests provide (especially the protection of water quality and quantity). For example, there are several well-documented forest types in the region (http://www.epa.gov/region03/mtntop/eis2003.htm). A more thorough accounting of the numerous forest types in the region (Braun 1942; Hinkle et al. 1993) should be included in the Draft SEIS. Omission of the mixed mesophytic forest type and its significance regionally and globally is conspicuous; as the Mid-Atlantic Highlands, which includes the project area, contains the most extensive interior hardwood forests in the world at the temperate latitudes (Riitters et al. 2000). These forests are also the most diverse in North America (Ricketts et al. 1999).

Additionally, data that we have describing the condition of forest resources reveals that the Delbarton to Belo alignment and the Buffalo Mountain surface mine would impact valuable forest areas that provide important bird habitat, protect water quality and biodiversity, and support a wide array of ecosystem services at the landscape scale. Researchers have spatially analyzed and defined critical forest in the area as interior core forest areas of 250 acre or greater, headwater forests, and cove or ridge forests. These areas have been documented to be important for biodiversity and are more likely to be impacted by mining than other areas (Maxwell et al. 2012). Our analysis of critical forest in the three HUC 12 sub-watersheds impacted by the project indicates that approximately 60% or more of the sub-watersheds contains critical forest. With the addition of BMSM and all other permitted mines, the amount of critical forest declines approximately 10% in each HUC 12 sub-watershed. Furthermore, at the regional scale of the Tug HUC 8 sub-basin, critical forest declines in future scenarios.

The WV GIS Technical Center has recent (2011) forest fragmentation data that should be

utilized to evaluate the project impacts to the terrestrial environment. We utilized the fragmentation data, recent land cover data, and WVDEP permit boundaries to assess how the landscape will change as mines are permitted using the forest fragmentation model after Vogt (2007). In general the forest becomes more fragmented with increases in forest edge and major decreases in large intact (i.e. core) areas of forest as BMSM and all permitted mines are added. Under a worst-case scenario, and when summarized to HUC12 watersheds, the potential exists that up to 30% of the unfragmented core forest areas would be lost. Loss of connected interior forest areas has important implications for ecological processes (Wickham et al. 2007) and should be further examined in the Draft SEIS.

Species

Although the Draft SEIS documents species within the project area, it fails to account for the impacts of the project on those species. This is important to understanding the potential impacts not to just individual species, but to the biodiversity of the area as a whole.

The Draft SEIS only mentions two (wood thrush and ovenbird) of the twelve songbirds sensitive to fragmentation reported in the mountaintop mining EPA-led Programmatic Environmental Impact Statement (http://www.epa.gov/region03/mtntop/eis2003.htm). There was no mention of cerulean warbler. Cerulean warbler is identified as a Species of Concern under the Endangered Species Act and listed at Action Level II (in need of immediate management or policy range wide) by Partners in Flight (PIF) (http://www.epa.gov/region03/mtntop/eis2003.htm). Two other songbirds, Louisiana waterthrush, and eastern wood-peewee, studied in the Programmatic EIS, are listed as at Action Level III (management needed to reverse population decline or stabilize populations) (http://www.epa.gov/region03/mtntop/eis2003.htm). The potential impacts on forest songbirds was not addressed (section 4.3.1.2), and the omission of cerulean warbler is conspicuous.

According to the Programmatic EIS there are nine species that are listed as threatened (T), Endangered (E) or Species of Concern (SOC) that occur in West Virginia counties associated with the Tug Fork Subbasin (8-digit Hydrologic Unit). The current Draft SEIS only mentions two of these species (Indiana bat and Virginia big-eared bat), and that mist surveys were conducted. The status of Eastern small-footed bat has been change from SOC to Under Review for Listing because of white-nose syndrome. It was not mentioned in the Draft SEIS. Further sampling should be undertaken to determine if these species will be impacted by the proposed mine and highway.

In addition to federally listed species, there are 18 species considered at least at moderate risk of global extinction by NatureServe (Ranked G3 or Higher) that occur in counties associated with the Tug Fork Subbasin. Thirteen of these species are known to occur in West Virginia and most are not mentioned in the Draft SEIS. Of these species 4 are considered Imperiled in West Virginia and 6 are listed as Critically Imperiled (NatureServe, 2012). While these species may or may not be protected federally and there is no state endangered species list in West Virginia, based on the assessment of Nature Serve and its partner state natural heritage programs, these species are at some risk of extinction. Further sampling should be undertaken to determine if and how these species will be impacted by the proposed mine and highway.

In order to more fully understand the potential direct and cumulative impacts of the proposed projects, we strongly suggest that the Draft SEIS better describe the terrestrial environment, and the potential impacts from the proposed projects to the landscape features and the services they provide, which is currently lacking. See Wickham et al. 2013 for additional considerations. Inclusion or consideration of best available data and science regarding expected impacts is not evident in the Draft SEIS.

Cumulative Impacts

The Council on Environmental Quality's regulations define "cumulative impact" as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." 40 C.F.R. § 1508.7. Similarly, the 404(b)(1) Guidelines, 40 CFR 230.1(c), require an analysis of the cumulative effects of each discharge of dredged or fill material on the aquatic ecosystem, in light of the cumulative impacts of known or probable impacts of other activities on that ecosystem.

NEPA and its implementing regulations direct a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment. While EPA recognizes that the Corps' regulations allow the Corps' scope of analysis of impacts to be limited to impacts caused by the discharge of dredged or fill material, this Draft SEIS purports to support both the Corps' CWA Section 404 permit decision *and* the decisions of the FHWA related to the shift in the KCH alignment. Unlike the Corps' scope, FHWA's scope of analysis may not be limited to impacts from the discharge of dredged or fill material, and accordingly, the analysis in the Draft SEIS should be broader and more inter-disciplinary to be consistent with NEPA and its implementing regulations. While the Draft SEIS attempts to assess cumulative impacts, there is little analysis outside application of the Corps' Cumulative Effects Analysis (CEA) methodology, which is limited in scope to impacts to aquatic resources and flawed in its approach.

The Draft SEIS did not evaluate the holistic environment and utilize a systematic, interdisciplinary approach as encouraged by the CEQ regulations. The cumulative effects analysis presented in the Draft SEIS is primarily the CEA tool results with mention of other information; it is unclear what that additional information was and how it was used in the cumulative impact analysis. The CEA tool design is limited to the consideration of one parameter, the West Virginia Stream Condition Index (WVSCI). The CEA tool relies on a presumed correlation to WVSCI. Also, given that it appears that the data sets are derived from one or more data sources, it should be clear in the Draft SEIS who generated these data sets, and the vintage of the data and whether is correctly characterizes the environmental condition.

The CEA tool as presented in the Draft SEIS is a multi-criteria analysis tool which normalizes criteria of different units and then combines these normalized criteria using value

judgments. Neither the specifics of the normalization methodology nor the value judgments (tradeoffs in the decision making process) were made transparent in the Draft SEIS. As the CEA tool supports decision-making, the public would benefit from disclosure of the methods and value judgments.

Furthermore, there are major concerns with the scope, methods, lack of integration, and unsubstantiated conclusions of cumulative impacts in the Draft SEIS. Throughout the cumulative effects section of the Draft SEIS, the geographic scope for the analysis varies from state, regional, and various watershed scales making it difficult to follow and understand the cumulative impacts of the project. The Draft SEIS does not state why the impacts are examined at different scales, nor does it indicate which scale is used to determine whether there are cumulative impacts and if they are acceptable or unacceptable. For example, sections 4.7.3, 4.7.3.3, and 4.7.3.6 appear to characterize the environment and potential impacts of the project at different geographic scales that are not always clearly articulated, nor are the results at the various scales pulled together to substantiate the claims of positive cumulative impacts.

Additionally, the methods for the analyses conducted, whether qualitatively or quantitatively, are not transparent. For example, section 4.7.3.3 references expert testimony that is not easily accessible and provides some details on the spatial analysis but fails to provide complete information on the methods for determining past, present, and future mining or vintage and scale of data used. Similarly the approach in section 4.7.3.6 is not adequately described to understand and evaluate the project, other projects and their impacts.

The Draft SEIS attempts to assess cumulative effects with limited analysis. The DSEIS presented an accounting of activities within the watershed, i.e. total number of streams filled or acres of forested cleared. However, there was no discussion or interpretation of the loss of environmental resources and functions. To the extent analysis is provided, it consists primarily of unsupported conclusive statements. By way of example, in section 4.7.3.6, the Draft SEIS states: "Long-term positive impacts would be associated with improved environmental conditions *guaranteed* (emphasis added) through the regulatory environment. These regulations are especially important where there are numerous development opportunities and the potential for threats to the natural environment occur. All three levels of government (federal, state, and local) have created laws or programs to address negative effects**."** This "guarantee" is not supported by information elsewhere in the document. To the contrary, the current scientific literature has increasingly documented the adverse water quality, environmental, and public health effects of Appalachian surface coal mining even in the context of longstanding federal, state and local regulations.

Additionally, section 4.7.3.6 states "[c]ommunity development and infrastructure projects would have mixed impacts to most resources. Considerable land in the area could see surface mining. There are 13 reasonably foreseeable future mining SMCRA permits within the Pigeon Creek watershed. The cumulative total of past, present, and future mining activity would encompass approximately 22,787 acres, or 25 percent of the watershed; approximately 36,461 acres of the Wolf Creek-Tug Fork watershed, or 28.7 percent; approximately 8,110 acres of the headwaters of Pigeon Creek, or 27.7 percent; and, approximately 6,828 acres of the Miller Creek-Tug Fork watershed, or 19 percent. The cumulative total of past, present, and future

mining within the geographic scope of the cumulative effects analysis is 5,477 acres. This represents 714 acres past, 1,409 acres present, and 3,354 acres future. Mining disturbances at levels less than 25 percent have been linked to degradation of the aquatic ecosystem (Petty 2010)." From this paragraph it appears that there are cumulative impacts according to the limited literature cited. Additional research shows that these percentages in the affected watersheds approach or surpass levels identified as having negative impacts to stream conditions. For example, regionally, Bernhardt et al. (2012) ascertained that biological impairment occurred when surface coal mines occupy more than 5% of the contributing watershed. Merriam et al. (2011) examined development impacts to water quality in the Pigeon Creek watershed of Tug Fork and determined biological impairment thresholds at 25% total mining and at parcel densities of 10 parcels/km^2. Furthermore, Merriam et al. (2011) found that when both stressors are present, in-stream conditions are worse and a change of in-stream conditions occurs at lower percentages of mining when residential development is present or increases. This finding of both stressors additively affecting stream condition is particularly important given the projected community development and mining in the project area.

Additionally, Lindberg et al. (2011) found strong linear correlations between the concentrations of mining related contaminants (conductivity and the concentrations of selenium, sulfate, magnesium, and other inorganic solutes) and the proportion of the contributing watershed in surface mines (conductivity: $R^2 = 0.93$, sulfate: $R^2 = 0.87$, selenium: $R^2 = 0.87$; $p < 0.0001$ in all cases) in the Mud River. Results from Lindberg et al. (2011) also show that there is a cumulative impact of multiple mines within a single catchment within the Upper Mud River and that reclaimed mines still contribute negatively to water quality.

The Draft SEIS fails to account for these and other scientific literature documenting adverse cumulative effects from surface mining activities. It may well be that the joint development project offers benefits that outweigh these cumulative impacts. Given the purpose of NEPA to ensure educated decision making and to inform the public, however, the absence of any discussion or analysis of these impacts is a deficiency in the Draft SEIS

In summary, the Draft SEIS is inconsistent and incomplete in its scope of analysis, and is ambiguous in the analytical approach for evaluating cumulative effects of the project. Additionally, the assessment of cumulative effects does not utilize a systematic, interdisciplinary approach as required by NEPA that integrates the various impacts of the project, nor does it draw scientifically based conclusions about the impacts and their cumulative effects (be they positive or negative). Instead it relies on mitigation, current environmental regulations, and economic benefits as justification for the conclusion that "positive" cumulative effects will occur. Although EPA finds the cumulative effects analysis substantially flawed, we are willing to engage with the Corps and FHWA in order to address these identified gaps. Additional detailed comments can be found in Enclosure 2.

Mitigation

The Compensatory Mitigation Plan (CMP) proposes the off-site restoration of 4,944 linear feet of Hell Creek, enhancement of 4,098 linear feet of stream channel off-site; preservation of 5,281 linear feet of six unnamed tributaries within the subwatershed; construction

of wastewater collection lines and tap-ins for the residents of Hell Creek's watershed and a three-mile long force main to the Delbarton, WV wastewater treatment plant; establishment of 29,079 linear feet of stream on-site; and 16,345 linear feet of stream establishment off-site within the Pigeon Creek, Miller Creek, and Buffalo Creek watersheds.

The proposed mitigation plan, as detailed in the Draft SEIS and as presented in the applicant's 2010 CMP, is insufficient to clearly offset the proposed aquatic impacts associated with the proposal. Significant issues identified with the plan were inadequate baseline data used to calculate debits and credits, heavy reliance on stream creation for the mitigation, and a lack of meaningful performance standards. In addition, the proposed mitigation plan includes a number of uncertainties which make it difficult to truly evaluate.

As already pointed out in our comments, the data used to assess the baseline conditions of the resources proposed to be impacted is deficient. To fully assess mitigation needs, reliable baseline data is required to fully characterize the resources to be impacted and to identify the functions those resources are providing both locally and to the watershed. However, there are significant concerns with the data used to describe the baseline conditions of the impacted resources. Mitigation needs cannot be reasonably assessed without using accurate baseline data, particularly when that data is used to calculate debits and credits, as it was in this case. The functional categorization as described in the CMP also relied on the flawed biological, water quality, and habitat data assessments. Therefore, the adequacy of the CMP to offset the impacts to very good quality aquatic resources comparable to reference conditions cannot be fully evaluated until complete and accurate baseline data is collected according to the appropriate protocols.

Conceptually, the plan is a watershed-based approach that would address issues in the Hell Creek sub-watershed via restoration, enhancement, establishment, and preservation, but the majority of the proposed mitigation relies on stream creation, which has not been scientifically supported or generally shown to replace the functions and values of the high gradient Appalachian headwater streams that will be impacted. These new stream channels are unlikely to offset the permanent and temporary losses of headwater streams within these watersheds. The 2008 Compensatory Mitigation Rule notes that streams are difficult to replace, and does not encourage stream establishment.

Off-site stream establishment channels will likely receive suspended sediments, metals, and high ion concentrations from the mined area and can be expected to have minimal function due to the water quality limitations identified. The projection that water quality will be "good" in these channels is based on out of date information on the adjacent Peg Fork Surface Mine. Based on sampling data provided, conductivity downstream of valley fills at the Peg Fork Surface Mine has increased 500 µS/cm above pre-mining conditions and is continuing to rise (Fulton 2013.) The steepness of these new channels may also result in erosion and sediment problems downstream. The on-site creation consists of the conversion of sediment ditches into low-gradient, uniform channels will provide few, if any, of the ecological functions of the streams they are replacing. Petty et al. (2010) compared perimeter channels on mine sites to reference channels, and found that the channels more closely resembled wetlands than the streams they were designed to replace. They found a distinct shift from sensitive, lotic taxa in

reference channels to tolerant, lentic taxa in perimeter channels. The perimeter channels tended to be vegetated with obligate wetland plants, creating differences in vegetation, canopy cover, and structural habitat quality. The Draft SEIS does not provide any supporting evidence that the proposed created stream channels on or off-site will successfully replace lost functions of headwater streams and the projected benefit of this portion of the mitigation is unsubstantiated in the Draft SEIS.

The CMP indicates that 5,281 linear feet of six unnamed tributaries within the Hell Creek subwatershed will be preserved by deed restriction along with a riparian buffer. While the narrative indicates that this is in-kind mitigation, the benefit provided by the proposed sites is not evident. All of the preservation reaches appear to be downstream of either impacted or established reaches. Recent research indicates that upstream watershed condition is a critical component in the success of stream restoration (Doyle and Shields 2012, Lorenz and Feld 2013). Due to the watershed and water quality impacts upstream, preservation would likely be more effective if it included the intact headwaters.

The proposed water quality component includes the construction of wastewater collection lines and tap-ins for the residents of Hell Creek's watershed and force main to the Delbarton, WV wastewater treatment plant. This work is projected to result in the treatment of approximately 1.25 million gallons of wastewater a year in the Hell Creek watershed and could result in of the treatment of approximately 5.76 million additional gallons of wastewater per year in Pigeon Creek. It is not clear whether residents will be required to connect to this sewer line, which may affect the success of the project. When sewer lines have been installed in other watersheds in southern WV, the projects have been met with some resistance from local residents who are reluctant to pay the maintenance fees. In addition, the success criteria is not well-defined; the CMP indicates that fecal coliform levels will be measured in the watershed and success will be determined by demonstrating an unspecified decrease in monthly average fecal coliform levels.

In addition to the sewer line project, restoration and enhancement are proposed in the Hell Creek watershed. Clearly, environmental uplift could be gained, but the benefit may be overstated, particularly in the calculations of mitigation credits. Overall, the specifics of the proposal are not clear enough for a determination of the overall benefit. The Preliminary Plans are conceptual and do not clearly indicate what changes are proposed. Given the existing development as well as the future mine, the proposed benefit from restoration and enhancement may be severely limited based on site constraints. Most of the restoration and enhancement reaches are close to roads and residential development, so buffers will be limited and activities will be subject to landowner and county approval. The riparian buffer associated with the restoration reaches appears to be a 10 foot sewer line easement, with an "associated riparian zone." It is not clear what kind of riparian zone can be established considering that vegetation is usually maintained by mowing and/or spraying within sewer line easements. In addition, full restoration typically relies on restoration of a floodplain or floodprone area, but it appears that the floodprone area will continue to be restricted by the existing and/or future development. Overall, the benefit of the proposal cannot be determined until the constraints are carefully considered.

While the applicant attempted to calculate mitigation debits and credits, all methods relied on the flawed baseline data to determine the required mitigation compensation. Water quality projections were optimistic; the projection was that conductivity will only increase by 200 µS/cm, which is unsubstantiated. As noted, credits were also maximized based on largely conceptual plans.

The negotiations appear to be ongoing with the landowners to ensure protection of the proposed mitigation reaches and buffers. While the CMP described permanent protection and riparian buffers for the various components of the mitigation through the use of deed restriction, it is unclear whether the proposed deed restrictions will ultimately be obtained from the private property owners. The extent of protection that will be offered by the deed restrictions is also unclear. Failure for landowners to cooperate has the potential to be a significant issue. It should be clear that the proposed stream and buffer areas can be fully protected in order to obtain the proposed mitigation credit.

Biological success criteria are not sufficiently robust to demonstrate a biological lift has been achieved. The proposed 5% increase in benthic WVSCI scores and species richness and biomass scores for fish at the end of year 10 does not clearly demonstrate an improvement. Five percent is too low to show a gain, since it would be within the range of natural variability. For the fish success criteria, a five percent difference in species richness is less than most re-visit data collected at the same site. Further, since the applicant is not proposing a method that is adequate to measure fish biomass, it is not likely that a change can be detected. Specific suggestions for more appropriate biological success criteria can be found in Enclosure 2.

Furthermore, the applicant states that the biological success criteria will only be applicable if water quality parameters remain within recommended ranges for freshwater organisms. These restoration sites are downstream of the BMSM; therefore the company should be responsible for maintaining water quality parameters required to support freshwater organisms. A decrease in water quality as a result of the mining operations should not release the applicant from responsibility for maintaining WVSCI scores.

Water quality success criteria are lacking. The sewerline is proposed to address the high fecal coliform levels in Hell Creek. The CMP indicates the monthly average is 619 colonies per 100 mL; the state maximum is a 30-day geometric mean of 200 colonies per 100 mL. An unspecified “decrease” from baseline fecal coliform levels is projected. It is not clear how much of a decrease in fecal coliform levels is required for the project to be considered successful, but we recommend that they attain primary and secondary contact criteria. As the purpose of the mitigation plan is to improve the Hell Creek watershed, improvements in water quality should be appreciable and improvement in biotic communities should be measurable.

EPA has identified several significant concerns in the CMP including: the impacted resources are not adequately assessed and therefore, inaccurate information was used to calculate the needed mitigation; the compensatory mitigation is not likely to replace the resources because using enhanced sediment ditches because the resulting aquatic physical, chemical, and biological quality of these “replacement” streams is likely to be highly degraded; the proposed plan includes a number of uncertainties which make it difficult to truly evaluate, and the performance

standards are inadequate. Therefore, it is not clear that the CMP will sufficiently or successfully compensate for the proposed impacts to resource of very good quality.

Physical and Human Environment

Air Quality

Impacts to both the National Ambient Air Quality Standards (NAAQS), and more generally to human health, were dismissed as being construction related, temporary, primarily related to "dust from the mine project" and exclusively fugitive (implying that it is unnecessary to consider their impact on NAAQS while stating that only Best Management Practice (BMP) controls are needed).

Air impacts from the mining operations are classified as "Temporary Construction Impacts" that cause only a temporary degradation of air quality that is restricted to the immediate construction zone. This characterization and conclusion is presented as a simple statement of fact with no corroborating analysis or evidence provided that would justify the statement. We are concerned that the potential impacts from a mining operation of Buffalo's magnitude may substantially degrade air quality well beyond the immediate area of operations and are not simply related to construction activities. Furthermore, it seems questionable to identify a mining operation as temporary if that activity is expected to continuously emit air pollutants over a 15 year period. To properly address these potential direct air quality impacts we strongly recommend that the Draft SEIS include a comprehensive emissions inventory and results of state-of-the-science air quality modeling to determine the impacts that can be expected from this mining operation.

The Draft SEIS states that "Air emissions associated with mining operations … are considered "fugitive emissions" under the *Clean Air Act"* and by virtue of this designation emissions need only be controlled by the implementation of BMPs. EPA defines "fugitive emissions" in the Clean Air Act as "those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally-equivalent opening" (see title 40 of the Code of Federal Regulations, sections 70.2 and 71.2). We disagree with the characterization of emissions from Buffalo Mountain as being exclusively fugitive. Although it is true that a portion of Buffalo's emissions will be fugitive (e.g., re-entrained dust from haul trucks, wind-blown dust emanating from bare ground and overburden piles, etc.) a large fraction of the emissions will result from diesel combustion sources such as haul truck tail pipe emissions and emissions from drills, excavators, and other similar equipment. Appropriately modeling may indicate that these non-fugitive emissions have the potential to emit significant amounts of CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and a variety of air toxics including diesel particulates. The use of the BMPs that are listed in Section 4.4.4.4 "Avoidance, Minimization, and Mitigation" are not designed to mitigate these non-fugitive emissions. This may be an area where EPA could provide assistance as a cooperating agency.

The Draft SEIS further states that "Surface mining does not meet the criteria for major source air quality permits (Title V of the Clean Air Act), because mining does not qualify as a permanent/stationary source that emits at least 250 tons/year of a regulated pollutant." Since emissions estimates have not been performed, the statement in the Draft SEIS is unsupported.

Again, we recommend that an emissions inventory be developed for the Buffalo Mountain mining operation. Furthermore, the statement above implies that because this operation is not covered under Title V of the Clean Air Act that its emissions do not impact NAAQS or Prevention of Significant Deterioration (PSD) Increments. Whether or not this operation is covered under Title V, all emissions must be considered when evaluating impact to NAAQS. If it is determined that a source has adversely impacted the NAAQS in an area the implications that such impact may have on a State Implementation Plan may need to be considered. Additionally, since PSD increment is consumed by all actual emissions, independent of how they are classified under the Clean Air Act, that did not exist prior to the establishment of baseline in an area, the emissions from the Buffalo mine will consume increment and may need to be considered in any future PSD analysis that needs to be performed in Buffalo's impact area.

Hydrology

Under the Surface Mining Control and Reclamation Act (SMCRA), the applicant conducted a Surface Water Runoff Assessment (SWROA). While the SWROA is not included as an appendix to the Draft SEIS it is referenced in several sections of the document. SWROA, Attachment J-11, Hydrologic Reclamation Plan, B.:, *Measures to assure the protection of the quality and quantity of surface and ground water systems* – it is stated that surface runoff may in fact be reduced slightly overall after mining and reclamation is completed due to increase infiltration expected through the more permeable backfill and valley fill material. This statement is contrary to highway construction procedures. In order to provide a stabilized structure for highway construction the subsoil materials are compacted. This measure would reduce soil permeability and increase surface runoff. Section 4.3.3.2 Potential Impacts, the Draft SEIS refers to the SWROA in the claim that there would be no net increase in peak flow for the 25-year/24 hour storm event. However the SWROA evaluates pre, during and post mining activity without the hydrologic changes that would occur related to the highway construction. In preparation for the highway surfaces the subsoil would be compacted reducing infiltration and increasing surface runoff. This soil compaction could have an effect on peak surface water runoff for both the mining and post mining conditions. Anecdotal reports of flooding on the Red Jacket section of the KCH have been made. It would be prudent to investigate if flooding potential is increased by the highway.

Under the Hydrologic Concerns section of the Cumulative Hydrologic Impact Assessment (CHIA), it is stated that, "The surface run off analysis indicates that there will be increase flows in the receiving streams due to the mining activity, negating any flooding. The CHIA should include additional detail on the surface runoff analysis that supports this claim.

Drinking Water and Proposed Water Treatment

The proposed CONSOL project in Mingo County is in the vicinity of public water supply systems, some small or very small. Systems in areas impacted by mining may require treatment to address contaminants that are in the water supplying the system. Historically, some public water supply systems in Mingo County near mining activity have required treatment to remove iron or manganese to address consumer concerns. Increased treatment costs can be a challenge for a small public water supply system that services small populations. The document should

include a detailed discussion of the creeks supplying water to the public water supply systems and potential impacts to the public water supply systems in the project area particularly the Mingo County PSD – Naugatuck and the Williamson Utility Board as well as Mingo County PSD Chattaroy, Mingo County PSD Ragland District, Town of Delbarton, Mingo County PSD Pigeon Creek and Mingo County PSD Lick Creek.

Depending upon the amount of pollution generated by mining, or how resulting pollutants are store or transported, mining activity can potentially impact domestic water supplies. In 2003, the Delbarton Mining Company needed to replace water for 180 residents of Mingo County, West Virginia due to mining activities (*Charleston Gazette* 2001). Although the project proposal states that impacts to ground water are not expected, per Section 4.2.7, Needs and Welfare of the People, the Draft SEIS needs to discuss how any negative impacts to existing domestic water supplies due to land use activity in the project area will be addressed.

As part of the Mitigation and Stream Restoration Plan CONSOL is proposing water quality improvements to the Pigeon Creek watershed. Those measures include the installation of sewer line and a pump station in the Hell Creek subwatershed, a force main extension and funding for the Delbarton Wastewater Treatment Plant for additional capacity. The document provides little detail on the measures and there are concerns on the placement of the 13,000 linear feet of sewer lines and pump station.

Social-Economic Impacts and Environmental Justice

NEPA establishes a national policy to create and maintain conditions under which man and nature can exist in productive harmony and to fulfill the social, economic, and other requirements of present and future generations of Americans. As a result, NEPA requires a systematic, interdisciplinary approach integrating the natural and social sciences in planning and decision making which might impact the environment. An important component of the NEPA evaluation is the consideration and analysis of whether the Proposed Action has the potential to significantly affect the quality of the human environment. As stipulated in the CEQ Regulations (40 CFR 1508.14), the *"Human environment" shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment."* Thus, when an environmental impact statement is prepared and the economic or social and natural or physical environmental effects are interrelated, the study should discuss all of these effects on the human environment. The Draft SEIS, Section 4.2 Socioeconomic Environment and Section 4.2.5 Social Environment, did not adequately address the social and economic impacts in association with the environmental analysis in relation to the Proposed Action.

The Social, Economic and Cumulative Impacts Analysis overlap to encompass effects on Human Health, Environmental Justice Communities, Children's Health, and Cultural Resources. EPA is concerned with the potential impacts to human health especially to environmental justice communities and children within the vicinity of the Proposed Action. Recent research has suggested that health is disproportionately impacted both in proximity to mining activities, including mountain top mining (MTM) and in proportion to the tonnage of coal mined. To adequately address the concerns raised by these research findings, EPA recommends the completion of a Health Impact Assessment (HIA). An HIA is a suitable approach for assessing

potential human health impacts from MTM and other environmental disturbances such as highway construction. Potential health effects include increased risk of lung cancer, heart disease, kidney disease, and mortality from heart attack. As a cooperating agency, EPA would be willing to provide information and/or examples on how to approach an HIA.

These potential health effects are compounded when the communities impacted are comprised of environmental justice communities (low income or minority populations) and children. EPA disagrees with the conclusion in the Draft SEIS that "there would be no environmental justice populations that would be disproportionately impacted by the mine project…" The Draft SEIS did not fully consider disproportionately high and adverse effects on the impacted community, many of whom are low-income. The Draft SEIS asserts that the only negative impact of the project within the context of Environmental Justice is displacement of residents. EPA agrees that displacement of residents is a significant adverse impact; however, there are a number of potentially adverse impacts (air quality, truck traffic, drinking water, noise, proximity of blasting zones, cultural resources, community involvement, and cumulative effects) that should be addressed with regards to their potential to disproportionately impact the low-income populations identified in the EIS.

An area of importance that was not addressed in the Draft SEIS is that of Children's Health. The Draft SEIS states, page 4-7, that 28.0 percent of the population was under the age of eighteen. Children by their stature and development are more at risk to environmental impacts than adults. Studies have shown a significant association with a county's mountain top removal mining and infant mortality rates in excess of the national norm. In addition, the Draft SEIS failed to comply with Executive Order 13045, "*Protection of Children from Environmental Health Risks and Safety Risks*" which is explained in more detail within the Technical Comments document.

The Draft SEIS failed to address the Proposed Action impacts of Cultural Resources on the affected community. The mountains themselves that will be affected by the Proposed Action are viewed as a cultural resource by many residents. For many impacted people, the mountains have helped define their society and influence their daily lives. In addition, many cemeteries will be indirectly impacted by the Proposed Action. Although these cemeteries are not NHPA-eligible, they are considered a sensitive resource of significance to descendants. Indirect impacts must be addressed and descendents must be consulted to ensure respect for customs and beliefs as well as access to cemeteries are not interrupted.

These Social Impact categories must be given attention to determine the potential impact to local communities that could result from the Proposed Action.